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DIRECTORATE OF
INTELLIGENCE

Intelligence Memorandum

Communist China: An Estimate Of Gross National Product

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CENTRAL INTELLIGENCE AGENCY

Directorate of Intelligence

April 1971

INTELLIGENCE MEMORANDUM

COMMUNIST CHINA: AN ESTIMATE
OF GROSS NATIONAL PRODUCT

Introduction

1. All dollar estimates of the gross national product (GNP) of Communist China are suspect. The estimate in this memorandum is no exception. The usual problems of making calculations in two wholly different price systems are compounded in the case of China by the absence of reliable statistical data and by the restrictions placed on travelers, diplomats, and other independent observers. Starting in 1960, the Chinese regime imposed a statistical blackout, and practically no useful national economic data have been released for a decade. Recently, however, there was a slight lifting of the blackout when the American writer Edgar Snow was given some national economic data for 1970 by Premier Chou En-lai.

2. This memorandum presents an index series for China's GNP in 1952 and 1957-70 and translates this series into a series in 1969 US dollars. The text describes the estimates and their implications, summarizes the methodology, evaluates the Chou/Snow figures, and ventures a general estimate for GNP growth in the Fourth Five-Year Plan (1971-75). An Appendix sets forth the methodology

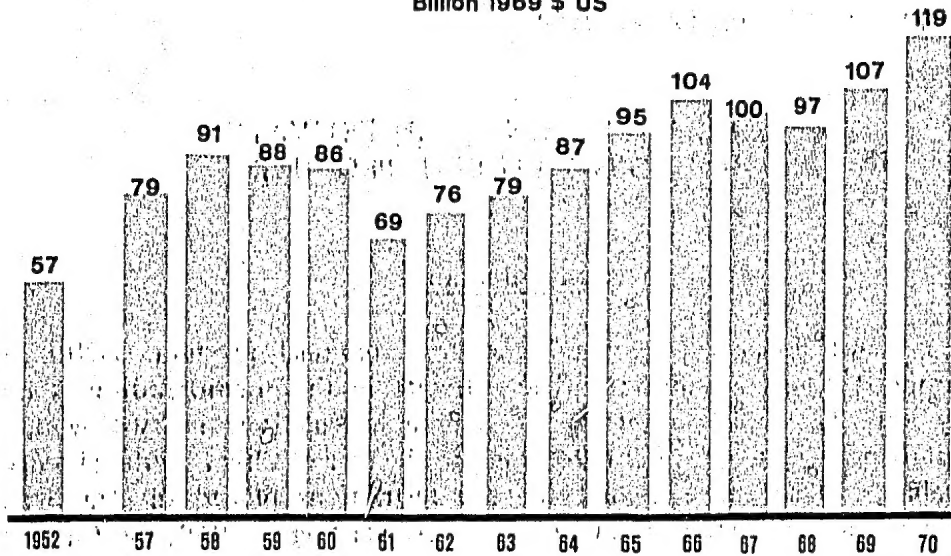
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Note: This memorandum was prepared by the Office of Economic Research and coordinated within CIA.

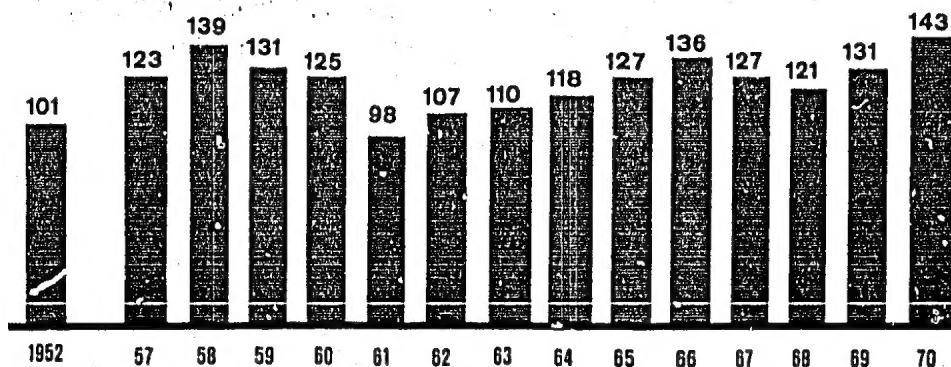
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SECRET**COMMUNIST CHINA: GROSS NATIONAL PRODUCT****PART A****Aggregate GNP**

Billion 1969 \$ US

**PART B****Per Capita GNP**

1969 \$ US



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3. The GNP of Communist China in 1970 was approximately \$119 billion in 1969 US dollars, or \$143 per capita. Since 1952, the statistical base year immediately preceding the First Five-Year Plan period, China's GNP has doubled. Overall output has thus been growing at an average annual rate of 4% under the Communists. The advance has been erratic, as shown in Part A of the chart. The severe damage from the disastrous Great Leap Forward (1958-60) shows up clearly on the chart, whereas the setback from the Cultural Revolution represents a much less spectacular interruption to China's economic advance. The year 1970 is revealed as the best year to date and a strong launching platform for the new Fourth Five-Year Plan (1971-75).

4. The annual average rate of growth of population in China during 1952-70 was probably 2.2% plus or minus 0.3%. Therefore, the annual average rate of growth of per capita GNP in this period was about 2%. In Part B of the chart, per capita GNP shows the same profile as aggregate GNP but with a long-time upward trend of 2% instead of 4%. Per capita GNP in 1969 was only a little higher than in 1957, the final year of the First Five-Year Plan. The year 1970, however, saw a jump of almost 10% in per capita GNP.

5. Whereas overall economic activity increased at a 4% average annual rate in 1952-70, agricultural and related activity advanced at only 2%. Industrial and related activity, on the other hand, advanced at an average rate of 8% on the small 1952 base - 6% if the larger 1957 base is taken as the starting point. In 1957 the ratio of agricultural to industrial activity was roughly 2 to 1. By 1970, industrial activity had caught up with agricultural activity.

6. These results are all consistent with the following general conclusions on the Chinese economy presented in recent intelligence reports*:

a. Maoist political upheavals - particularly the Great Leap Forward - have imparted an erratic quality to Communist China's economic growth.

b. The regime has pursued a long-run policy of spurring industrial development, at the same time providing

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sufficient growth in agriculture to preserve the productive efficiency and morale of the growing population. Thus both population and agricultural production have been growing at a long-term average rate of 2%, whereas industry has been growing at 8% since 1952, or 6% if 1957 is used as a base. A corollary is the increasing proportion of industrial and related activities in GNP in comparison to agricultural and related activities.

c. With the waning of the Cultural Revolution, the Chinese are scoring some impressive successes – for example, in industrial construction, in armaments production, and in industrial support for agriculture. These achievements are reflected in a sudden spurt in aggregate and per capita GNP in 1970.

Some Implications of the Results

7. In both 1957 and 1970 the urban population is believed to have been about 15% of the whole. If the ratio of agricultural activities to industrial activities was 2 to 1 in 1957, then the GNP produced by the average urban dweller was three times the GNP produced by the average rural dweller. By 1970, when the ratio of agricultural to industrial production was approximately 1 to 1, the urban dweller produced six times the GNP of the rural dweller. This conclusion is consistent with (a) the buildup of industrial capacity and technology in the modern sector of the economy and (b) the increase in the proportion of the urban population working at full-time rather than part-time jobs and/or at higher levels of skill and productivity. In other words, labor has been so plentiful in the urban areas that large injections of new capital did not require any additional labor beyond the normal population increase. China does not have the problems of the USSR of building up the urban labor force by drawing on the rural population and of substituting machinery for labor in the farm sector.

8. One test of the reasonableness of the dollar GNP figures for China is to compare the value of imports of various countries – which is accurately known from international trade statistics – as a percent of GNP. Figures for major countries in 1969 are:

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<u>Country</u>	<u>Imports as Per-</u> <u>cent of GNP ^{a/}</u>
Communist China	1.7
USSR	2.2
United States	4
India	5
Japan	7
United Kingdom	14
West Germany	14

a. Converted at US purchasing power equivalents.

The low percent for China is not unreasonable, given its huge and diversified land area, its large and fairly self-sufficient agricultural sector, and its long-term policy of economic autarky.

9. The per capita level of GNP of \$143, which seems high for the ordinary underdeveloped country, should be considered in the light of China's general economic position. In 1969-70 the Chinese economy made a number of gains which look very impressive when listed down; a few examples follow:

- the rapid development of new oilfields and new primary and secondary processing facilities;
- the pushing of rail lines through extremely rugged terrain and the building of major railroad and highway bridges;
- the launching of two satellites;
- the provision of several thousand workers and technicians for the Tan-Zam rail project, one of the biggest development projects in all of Africa;
- the serial production of a jet medium bomber, the TU-16 Badger, and the simultaneous development and

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production of a surprising range of other modern weapons, some of indigenous design;

- the continued construction and commissioning of several sizable industrial complexes.

10. This Chinese economy is therefore not a subsistence economy with a per capita GNP of \$100 or less. Rather, it may be regarded as an economy with, say, a \$100 "basic maintenance" sector (consumption plus maintenance of the consumption mechanism) and a \$43 per capita "development thrust" sector (heavy industrial investment plus modern weapons). This per capita figure added up over a population of 840 million gives a powerful absolute push especially in the weapons field. The 2.2% growth of population in this context can be viewed as constricting this development margin. And finally, the desire of the population for a steady increase in material well-being - and the Maoist counter pressure for a spartan outlook toward material goods - can be interpreted as a contest over this margin. As the chart shows, China broke through the \$100 level by 1957, fell back precipitously as a result of the Leap Forward, and now is moving ahead with a slowly widening margin.*

11. Many observers have noted the inherent difficulties in collecting economic data for GNP purposes, especially in the less developed countries, and the conceptual difficulties in dealing with two often radically different price systems. Therefore, the following tabulation of per capita GNP for various countries in 1969 or 1970 can only help to show that the estimate for China is not unreasonable:

Country	Per Capita GNP ^{a/} (US \$)
United States	4,600
West Germany	2,900
USSR	2,000
Japan	2,000
Romania	1,100
Nationalist China	330
Communist China	143
Pakistan	120
India	80

^{a.} *Converted at US purchasing power equivalents.*

* *Because of the US inflation, the \$100 benchmark for per capita GNP is not a fixed measure. For instance, the \$100 figure in this memorandum, which is in terms of 1969 US prices, would represent only \$75 in 1957 prices. Conversely, if in 1957 an observer had believed a \$100 per capita GNP separated the less developed countries with momentum from those without, today the benchmark would be \$130.*

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Summary of the Methodology

12. The primitive methodology used to arrive at these GNP estimates may be summed up in one sentence: A GNP index series was constructed by combining an agricultural and an industrial production index and this index series was converted to dollars by use of a dollar estimate of Chinese GNP for 1955.

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At this point, only a few key steps are listed, steps that are illustrated by the summary information contained in Table 1:

- a. A series for grain production was modified in two ways - by allowing for the production of subsidiary foods and non-food crops - so that it could serve as an index of overall agricultural production.
- b. The series for agricultural production was combined with an existing series of industrial output to form a GNP index, agriculture being weighted twice as heavily as industry for 1957.
- c. An estimate of \$48.19 billion for Chinese GNP in 1955 was used to obtain Chinese GNP for 1957 as \$79.23 billion in 1969 dollars by noting that: (1) real Chinese GNP was 16.6% higher in 1957 and (2) the US GNP deflator price index had risen 41% between 1955 and 1969.
- d. The GNP index series was converted to 1969 US dollars by multiplying through by \$79.23 billion and dividing by 100.
- e. A population series was introduced in order to calculate GNP per capita both in dollars and in index number form.

Chou/Snow Figures

13. As a result of his long conversation with Premier Chou En-lai during his recent visit to Communist China, the American author Edgar Snow has furnished the most useful set of economic claims to have come out of Communist China since 1960. In articles in the world press in February and March of 1971,* Snow reports that Chou:

* See, for example, *FBIS Daily Report: Communist China*, 25 March 1971 (FBIS-CHI-71-58) pp. B-6-11, for Snow's report in the Yugoslav press; his reports in the Italian and US press are practically identical.

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Table 1

Communist China: Key Line Items in Calculation of GNP a/

	<u>1952</u>	<u>1957</u>	<u>1958</u>	<u>1959</u>	<u>1960</u>	<u>1961</u>	<u>1962</u>	<u>1963</u>	<u>1964</u>	<u>1965</u>	<u>1966</u>	<u>1967</u>	<u>1968</u>	<u>1969</u>	<u>1970</u>
Grain (million metric tons)	154	185	200	165	160	160	175- 180	175- 180	180- 185	190- 195	195- 200	210- 215	195- 200	200- 205	215- 220
Agricultural production index (1957 = 100)	83	100	108	86	83	78	90	90	96	101	106	115	106	109	116
Industrial production index (1957 = 100)	51	100	130	163	160- 162	103- 105	106- 109	117- 123	133- 141	155- 165	177- 190	142- 154	147- 162	178- 198	208- 233
GNP index (1957 = 100)	72	100	115	112	109	87	96	100	110	120	132	126	122	135	151
GNP in billion 1969 US dollars	57	79	91	88	86	69	76	79	87	95	104	100	97	107	119
Population, mid-year (million persons)	570	642	658	674	689	701	710	721	735	751	766	783	800	818	836
Per capita GNP in 1969 US dollars	101	123	139	131	125	98	107	110	118	127	136	127	121	131	143
Index of per capita GNP (1957 = 100)	82	100	112	106	101	79	87	89	96	103	110	103	98	106	116

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- assessed the general economic situation in China, including the economic effects of the Cultural Revolution;
- supplied data on the output of half a dozen major commodities in 1970; and
- gave estimates of the aggregate value of Chinese national output in 1970.

14. As to the general economic situation, Chou spoke of strong advances in industry and agriculture. He did admit that the Cultural Revolution caused industrial production to fall in 1967-68 (Table 1 shows a fall of almost 20% in 1967). But he added that the production from communes never fell during the Cultural Revolution (Table 1 shows a record grain crop in 1967). He summarized by stating that the economy suffered "relatively modest basic damage" during the Cultural Revolution. Chou's assessment of the economic effects of the Cultural Revolution is in harmony with the pattern of the GNP series for 1966-69 presented in this memorandum and with the underlying physical production data from which the series was calculated.

15. As for Chou's estimates of the output of major commodities in 1970, they appear high but not beyond the realm of reason. For example, his "over 240 million tons" of grain compares with the 215-220 million tons used in this memorandum. Either figure would mean that the per capita food supply in 1970 is in the same neighborhood as the supply in the statistical base year of 1957. Chou's figure would mean, however, that agriculture would need less support from the other sectors in 1971-75, whereas our figure suggests that the pressure on agricultural resources will not be relaxed in 1971-75.

16. Chou's 20 million tons of crude oil for 1970 compare with our estimate of production of 18 million tons, with both figures representing a sharp rise in the output of this strategic industry. His figure of 14 million tons for fertilizer production is double our 7 million, but the problem of identifying and quantifying the output of several thousand little plants makes any estimate highly conjectural. Chou also gave figures for steel (annual output of 10-18 million tons in 1966-70) and cotton cloth (output of 8.5 billion linear meters in 1970).

17. These Chou/Snow figures for individual commodities are bare of context (such as the underlying provincial data, or data from previous years) which would help in analysis. However, they do share one feature of importance for judging their validity - that is, the use by Chou of Edgar

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Snow as a friendly and effective transmission belt for publicizing as rosy as possible a picture of Chinese Communist economic achievements.

18. As to the third element in the economic briefing, Chou's estimate of Chinese national output in 1970, was as follows:

	<u>Billion US \$</u>
Industry and transport	90
Agriculture	30
<i>Total</i>	<i>120</i>

19. Three comments on these figures are especially relevant to this memorandum:

a. First, the Marxist definition of national output ordinarily covers the material output of industry and agriculture. According to Snow, Chou said his figure of \$90 billion "includes only the industrial and transport sectors and does not include the trade and service sector." Thus Chou's estimate for nonagricultural activity is understated by Western standards to the extent that he leaves out important segments of economic activity; at the same time, the estimate is overstated by an important factor working in the opposite direction - this is the double-counting of products at different stages of production, which means that industrial output as reported by Chou may reflect not only the trucks produced but also the components that went into them and the steel that went into the components. Similarly, in agriculture a large amount of service activity is ignored, although the amount of double-counting is much less than in industry. Thus the coverage of Chou's figures differs conceptually from the coverage of GNP as used in this memorandum.

b. Second, the proportion of industry to agriculture is 3 to 1 in the Chou figures for 1970 compared with 1 to 1 in the present memorandum, largely because of double-counting. If -- as seems likely -- the Chou figures represent data for gross output and if one uses Chinese Communist data for 1956 for translating gross value data

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for industry and agriculture into what the Chinese call "net value of industrial and agricultural output," the results in 1970 would be as follows:

	<u>Billion US \$</u>	
	<u>Agri- culture</u>	<u>Industry (Including Transport)</u>
Gross value of output	30	90
Net value of output	25	31

In this case, the net values implied in Chou's figures come close to the 1 to 1 ratio for industrial and agricultural activity in 1970. It should be remembered, however, that the definitions of "industry" and "agriculture" used by Chou differ substantially from the definitions of this memorandum.

c. Third, Snow reports that Chou's dollar figures were derived from yuan values by using the long-standing international exchange rate of 2.4 yuan to US \$1. The conversion process used in this memorandum, which is explained in the Appendix, rests upon a dual calculation of Chinese and US GNP, first in yuan prices and then in dollar prices.

20. In summary, it is only by coincidence that the dollar estimate of national output for 1970 (\$120 billion) presented to Snow by Chou is approximately the same as the estimate in this memorandum (\$119 billion). There are deep differences in coverage, in the relation of industry to agriculture, and in the method of conversion into dollars.

21. The overall impression given by Chou's presentation of China's economic situation is one of vigorous advance in industry and agriculture. As spokesman for the regime, Chou accentuated the positive features and soft pedaled the obvious failures such as the decline in industrial production in 1967-68. His statistics on the production of individual commodities in 1970, while high, cannot be dismissed out of hand. His estimates of national output ought not to be compared directly with the results of this

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memorandum, because of conceptual differences. If allowance is made for the public relations role of the Chou/Snow team, the independent estimates of this memorandum are generally consistent with Chou's economic briefing.

Range of Accuracy

22. Several elements should be considered in assessing the range of accuracy of the estimates presented in this memorandum. First, the accuracy of the underlying physical output data is a serious problem. The agricultural series rest mainly on grain, which in turn is a composite of rice, wheat, miscellaneous grains, and sweet potatoes. Estimates of these quantities depend on judgments as to acreage, crop patterns, weather, fertilizer and other inputs, and agricultural policies and incentives -- all subject to considerable error. The industrial production index rests on estimates of output for a small number of major industrial products and on a sub-index of military production. Not only are important products missing but also estimates for those included suffer from the long statistical blackout. Estimates of both agricultural and industrial production depend on increasingly tenuous ties with the statistical base of the 1950s. In spite of these limitations, the GNP index series with 1957 equal to 100 seems to give a credible profile of short-term fluctuations in aggregate output and in long-term rates of growth, 1952-70 or 1957-70. If Chou En-lai's production figures for 1970 turn out to be accurate, the whole series for the 1960s would have to be tilted upward with 1970 being roughly 10% higher.

23. Second, the translation into dollars of the GNP index series -- which is constructed independently of any assigned dollar values -- is the weakest link in the chain. The resulting aggregate and per capita dollar figures are to be swallowed with considerably less confidence than the index series itself. Still, the dollar figures are not unreasonable by the simple tests applied in earlier sections of the memorandum.

24. Third, the aggregate GNP figures were arrived at independently of the population estimates for China. The population of 836 million used for 1970 is probably right within plus or minus 50 million persons. If so, the per capita GNP figure of \$143 for 1970 would have a range of error from this source of about plus or minus \$8.

Prospects

25. The implication of these calculations and interpretations is that the short-term prospects for annual growth in Chinese GNP and its components are:

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- in agriculture, about 2%, or 4-5 million tons of grain a year;
- in industry, from 5% to 10%, with the lower end of the range more likely;
- in supporting sectors, in rough proportion to agriculture and to industry; and
- in GNP as a whole, about 4%, with 5% a possibility.

26. These hypothetical rates present a middle-of-the-road picture. If Chou En-lai's rosy recital is a more accurate picture of economic reality in Communist China, the rates would be higher. If China experiences two or three years of unfavorable weather in agriculture or if radical economic policies again move front stage, the rates would be lower. The rates are low in comparison with those of Taiwan, Japan, and West Germany but perfectly respectable in comparison with the remainder of the developed and less developed world. Conceivably, China could widen the gap between itself and the less developed world and at the same time fall farther behind the leading industrial nations.

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APPENDIX

Methodology

The estimates for the gross national product (GNP) of Communist China, 1952 and 1957-70, presented in this memorandum were calculated by: (a) constructing an index of aggregate physical output by combining indexes of agricultural and industrial output, and (b) converting this index series to a US dollar series by using the calculated dollar value of Chinese GNP in 1955.

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